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ABSTRACT

Three propositions which may suggest a strategy for meeting the measurement needs of education are presented: (1) Educational measurement possesses enough techniques and principles to permit tackling problems for their intrinsic importance, rather than for their convenience of fit to answers we already have; (2) Measurement needs are a subset of the overall educational needs and these, in turn, are a subset of societal needs; and (3) A multi-faceted multi-disciplinary approach to measurement is required. These propositions are examined in relation to current problems. An assessment of the divergence of views on educational goals is made and an interdisciplinary approach to evaluation is recommended. The concept of cost-effectiveness is examined and a continuous long-term program of assessment is seen as a standard pattern for evaluating educational programs. An interlocking, coordinated program involving guidance, testing, admissions, financial aid, curriculum and research, is proposed as a comprehensive and relevant measurement requirement for the children of poor and minority group backgrounds. Finally, the key role of measurement people is related to the future development of more sophisticated systems that will result in comprehensive and proper use of the results of measurement and the integration of those results with other data. (LR)

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MEETING THE MEASUREMENT NEEDS OF EDUCATION*

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"It was the best of times, it was
the worst of times, it was the age
of wisdom, it was the age of fool-
ishness, it was the epoch of belief,
it was the epoch of incredulity ..."

Charles Dickens, 1859

If Dickens had not written those words in A Tale of Two Cities more than 100 years ago, someone would no doubt be coining them today. For we are, I think you will agree, living in a time that combines the best with the worst, the wise with the foolish, faith with skepticism. Perhaps this is part of the human condition. Each generation (gap or no gap) tends to believe that its own era represents the most remarkable advances and the most threatening problems of any time in history. And each generation may in fact be right.

My topic today -- Meeting the Measurement Needs of Education -- reminds me of Dickens' words because both education and measurement currently illustrate the paradox he implied. Despite the affluence of our society, we have not yet provided truly equal educational opportunities for all our children. Despite our success in providing unequalled educational programs and sophisticated measurement techniques, we have a long way to go.

In approaching a topic like the one I was invited to address, there

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are many tempting approaches. I could propose a shopping list of the educational need to be met, or recount models for the generation of such lists, or propose instrumentalities for meeting the needs. To some extent I'll touch on each of these, but mainly I'd like to put forward three propositions that may suggest a strategy for meeting the needs, and use specific examples to illustrate the more general points.

The first proposition may be introduced by recalling a famous scene. When Gertrude Stein was on her death bed, it is said, Alice B. Toklas leaned toward her and whispered, "Gertrude, what is the answer?" To which Gertrude Stein whispered faintly, "Alice, what is the question?"

In some ways, educational measurement has been a collection of partial answers in search of plausibly related questions. We have had a technology -- a bag of tricks -- and have looked to see where they might be useful.

We have had no monopoly, certainly, on this approach. How often have you heard educators muttering about the manufacturers of devices of all kinds from slide projectors to computers, tailored for use in a general market or a business setting, and sold to schools without modification. The fact that they work tolerably well in the schools

is the justification. The fact that they don't quite fit the specific educational need is unfortunate but can't be helped.

In the early stages of any technology, it is perhaps inevitable that we will work from our solutions to our problems. If you give a small boy a hammer, he will find that a great many things need pounding. I would propose that measurement has passed that stage. We are now possessed of enough techniques and principles to allow us to turn with more confidence to the important real-world educational problems and tackle them, inventing new methods where they are needed to perform a satisfactory measurement function. This is not to say that we have a complete array of answers, but rather to propose that we should choose the questions for their intrinsic importance rather than for their convenience of fit to the answers we have. This is an article of faith, perhaps, but in this respect at least I'm an optimist.

My second proposition is rather obvious and I won't elaborate it, but will simply remind all of us that education's measurement needs in the decade of the seventies are, of course, a special subset of the needs of education itself. They will be defined by the directions in which education moves. And education's needs, in turn, reflect the changing social order in which it is embedded.

Education, along with the social fabric of which it is a part, is undergoing wrenching changes in the expectations held for it and the pressures placed upon it. The temper of the times is demanding, and the new requirements for measurement are exciting if not overwhelming.

My first two propositions, taken together, suggest that measurement people have an opportunity and a responsibility to apply their knowledge to the solution of major problems in education and, thereby, in the society at large. The importance of this point in time is that the knowledge and techniques available were never more sophisticated, and the problems never more urgent. Meeting the measurement needs of education is not only a stimulating intellectual pursuit: it is also a social imperative.

It follows, I believe, from what I've said that the developments in measurement must be embedded in, and integral to, broad approaches to effecting change in education itself. This statement brings me to my third proposition, which is that we cannot by ourselves bring about the needed new developments. I'm not in any way denying the importance of the new insights that will surely be developed within the discipline of educational measurement itself. My point is that most of the important real-world problems we are being called on to tackle will yield only to multi-faceted, multi-disciplinary attack. We are going to have to move on them in concert with the sociologists, the

mathematicians, the linguists, the demographers -- not simply to apply what each discipline can now bring to the problem, but to acquire new insights and devise new techniques from the interactive process.

These three propositions about a strategy for the 70's need to be examined in relation to some specific problems that are with us now and surely will not diminish. I'll concentrate on just two very large ones. The first is in the realm of assessment. The second has to do with education as it relates to the dispossessed -- children in minority or poverty groups.

I. Assessment

Each of us in his own way has had occasion to be acutely aware of the skepticism with which large segments of the public view the quality of education in America. A list of the categories into which the skeptics fall is frightening in the extent to which it spans the total society, sliced in different ways: intellectuals, poverty groups, radicals, liberals, students, taxpayers' groups, Edgar Friedenberg and Spiro Agnew.

The main points to be made about this crescendo of discontent are two. First, "quality" is in the eye of the beholder. We have made minimal progress toward defining what we want from education -- or even the dimensions along which to set our targets -- and so we can hardly expect anything but confusion as to where we are and how satisfied we are with our position. If we could state alternative

targets with some precision, we could engage in rational discourse about their respective merits and demerits. As it is, our debates are a semantic swamp.

Second, even if we could define educational goals specifically, and agree on targets, we are not now able to measure how close we are coming to most of them. Beyond the very simplest objectives, we have no good way to settle the bets.

Is this assessment of our condition too unflattering? Perhaps. I think it is an accurate reflection of the state of educational practice in the overwhelming majority of school districts -- and states -- across the country. In this respect, it is a fair description of the situation that leads to angry meetings of townspeople, after-midnight sessions of school boards, defeated school bond issues, and prematurely gray superintendents.

This is clearly a complicated, messy area but an area in which educational research and measurement can yield the crucial answers. It is an important one for us as a profession to tackle precisely because the questions are central to the concerns of a great many people in education, even though it is not one for which we have many answers at the ready. And it poses a set of issues that should be defined by educational research specialists working in concert with people from several other disciplines.

As you are aware, the economists are there already. In some relatively sophisticated communities, we are seeing a confluence of economic and educational thinking. Cost-effectiveness and PPBS are the watchwords.

Cost-effectiveness concepts are to my mind both important and valid. The first-order problems are purely practical, and they have to do with measurement. Most school systems have no useful measures of the cost of specific educational programs. And they have no indices of the effectiveness of their system in attaining most of the goals the community would espouse for the schools. These are measurement problems -- some of the unmet measurement needs of education.

The area of evaluation is, of course, gaining new prominence and importance in measurement circles, and rightly so. At the same time, the economists are developing further a climate of thinking that is hospitable to continuing programs of assessment based on cost-effectiveness approaches. The next step should be to bring together the two streams of development in a deliberate way -- to integrate the insights of the two disciplines of economics and educational measurement to produce a new synthesis directed specifically at solving the real-life problems of school districts.

This comment may bring to mind such phenomena as performance contracting, which is currently enjoying a wave of popularity. The performance contract evaluation and audit functions are indeed examples, at a rather basic level, of areas in which our theory and technique

are not very well developed. We have, for example, not done anything systematic about defining domains in which we should look for side effects or defining techniques by which we should look for them. We don't issue reports like: "The pupils in the special contract classes have gained an average of 1.5 grade equivalents in reading during the year. They have, however, gained a negligible amount in math, their work in science has dropped back, and parents report they are refusing to do the dishes or put out the garbage unless rewarded with transistor radios." We need a much more comprehensive evaluation of the effects of educational experiments, continuous over time and embodying the broader insights of both education and economics.

Such a marriage of two disciplines is, however, only part of the need. We are interested not only in the relation between program and cost, but also in the circumstances in which educational change can occur. And these circumstances are the province not only of the educator and the economist, but of the sociologist, the urbanologist and the political scientist, to name just a few.

Let me take a minute or two to make my point more specific. I am thinking of the familiar student change model in which educational effect is measured by the amount of student growth that takes place toward a stated goal between pre-testing and post-testing. The base-line of expected growth is established in advance of some experimental program of education. When the experimental program is to be installed, a new pre-test is given. Then the new program is carried out, and a post-test is administered. Again, the educational effect is calculated as the gain between pre-test and post-test. The efficacy of the experimental program is determined by whether or not the new gain under the experimental condition exceeds

the normal gain under the control condition. If the cost of the experimental treatment can be determined and compared with the "normal" cost of education under the control condition, it is possible, at least in theory, to relate cost to effectiveness. I say in theory because the complications are legion. To illustrate: it may well turn out that the experimental program worked well for one subgroup of the population and not for another. The subgroups may be fairly obvious ones -- girls versus boys, younger versus older, and so on. But who will suggest that we examine separately subgroups based on more subtle taxonomies involving students with positive versus negative self-concept, contrasting cognitive styles, differences on a dimension of dependence-independence, socioeconomic status, or interactions among these variables? The point is that some of the most useful hypotheses may come from, say, the insights of medical people or street workers or from personality theory rather than theory of educational research. Or suppose two communities have conducted the same experiment. In one the experimental treatment worked and in the other it did not. Why? Perhaps the nature of the school populations was markedly different in the two towns, or the community support was different, or the overall educational program in which the experiment was embedded varied substantially. Just to canvass the areas in which one might look for answers that call for inter-community comparisons suggests that we should call on the expertise of a variety of social and behavioral scientists to contribute hypotheses.

It is my belief that a continuing, long-term program of the kind

I have described, drawing on the contributions of specialists from many fields, should become a standard feature of America's educational communities. Measurement is at its core, and yet it is not enough for the measurement fraternity to develop the means of assessment. Our work must be integral to a larger effort that is focussed on the problem and ignores the boundaries of discipline.

(cont.)

II. Minority/poverty students

Let me turn, for my other example, to the formidable question of education's measurement needs as they relate to children of poverty and of the minority communities generally. Here, surely, we have a prime instance of a social and educational problem that commands our attention and our energies. The fact that our theory and our data are inadequate means we will tackle the problems with less precision than we would like, but again, we have to move on the problems that are important rather than on those for which our techniques are best suited. And we can't solve them by ourselves.

I'd like to illustrate this thesis by looking particularly at just one aspect of the problem: devising a set of arrangements through which young people from the ghetto can pursue their education beyond high school if they want to.

This question is one to which a great deal of attention has been given by people concerned with guidance, those concerned with testing programs, those involved in college admissions, people working with curriculum, financial aid officers and research people. Their attention and their concern are warranted and valuable. As people engaged in educational research in measurement, we clearly have a strong interest. The conclusion I have reached, however, is that the problem is simply not going to be solved the way we are going at it. The reason is that each of these groups is working conscientiously at its own part of the job but without a framework that embraces the other parts needed

for a solution.

The fatal flaw in what we are doing is simply that the various approaches, which are individually excellent in many cases, are uncoordinated. Given time, a decade or so, progress is likely to be marked. But we don't have to wait the decade. There is an urgent need for prompt action now to bring about an immediate, dramatic and effective improvement in the situation, and for new structures that will encourage future changes to take place at a significantly faster rate. It is my belief that a sweeping change is not only desirable but attainable if we mount a concerted and sustained attack on a number of fronts simultaneously, combining the efforts of the several groups concerned with the problem.

What I have in mind might be described as an interlocking,coordinated program of action in the six key areas of guidance, testing, admission, financial aid, curriculum, and research. The need within each area is for special new arrangements aimed particularly at solving the problem of access for the minority group student -- or for any other student whose preparation has not followed the pattern of solid academic preparation up to the point of application for college.

It is true, as I have said, that any improvement in any one of these areas would be worthwhile in its own right. But the problem is unlikely to be solved to any substantial degree through piecemeal efforts. From the standpoint of effective functioning, each part of the system depends on the presence of the others and in turn helps make them possible. We have here a rare opportunity to create true synergism.

Within an overall plan, there should be room for giving full scope and strong support to the excellent programs now being pursued. And there should be room for the introduction of the widest variety of innovative ideas. The important point is that if any key component is neglected, the whole system will remain ineffective. A barrier at any single point is sufficient to clog a channel.

The matter of broadening educational opportunities for disadvantaged students provides, to my mind, a prime illustration of the proposition that most of the important real-world problems we are being called on to tackle will yield only to multi-faceted, multi-disciplinary attack.

The system I am envisioning would rest on a strong and active program of guidance, to help identify and encourage students who would profit from higher education. It would be desirable to have a large number of guidance centers -- perhaps 100 -- throughout the country, related to but not confined to the big cities, to work wholly on the problem of guidance for disadvantaged students.

It will be pointed out that such guidance is already going on through the schools. True. But it is no secret that guidance resources are spread very thin in the urban schools, and school guidance people would be the first to applaud a strong effort to develop a companion system with a specialized aim -- college access for the disadvantaged -- with which they could work. It is true also that there are already agencies such as SEEK, Upward Bound, Project Access and others already in being to complement and extend what the schools are doing. A comprehensive system, if it were established, should not compete with such programs but should

provide cooperation, support and -- where it might be helpful and welcomed -- coordination. The need is to see to it that the various area of the country are covered systematically with guidance centers focussed on college-going for minority group and other disadvantaged students.

In the beginning, the guidance centers would naturally be concerned with students nearing the point of transition from school to college. As the program moved ahead, however, they could be expected to work with children at earlier points in their schooling. By Grade 12, of course, the door to college may have been effectively closed by inadvertent early decisions unless a student has been actively encouraged to keep it open.

Let me sketch briefly the kind of testing pattern I'd like to see for these students as they approach entrance to college. The emphasis of the test program should be on helping the student and his counselors understand the range and variety of his abilities and interests, the kinds of college-level work that he might pursue successfully, and the additional preparation he might need to pursue goals for which his training to date had not been adequate. The tests could be taken by any student on a walk-in basis at a guidance center and the interest measures could be completed at home. Practice forms of all materials would be available to all students. Conventional numerical reports would be supplemented by verbal reports that would interpret the numerical record and relate it to the student's interests and educational goals as he expressed them.

All results would be reported first to the student and to the guidance center. They would be reported to any college upon the student's request <u>after</u> he had had an opportunity to review them and discuss them with his counselors. If the student so requested, his results would be

erased completely and never reported.

Accompanying the guidance-oriented testing program for students would be a systematic program through which post-secondary institutions would gather and publish comprehensive descriptions of themselves for the benefit of prospective students.

I have touched on only two of the six components that I think are needed in a comprehensive system for minority students: guidance and testing. Beyond them are four others, which I'll simply mention once again:

admissions arrangements entered into cooperatively by groups of colleges and the guidance counseling centers, designed to bring about the most successful match between the students and the institutions of higher education.

financial aid in substantial amounts, since it is worse than useless to raise the aspirations of students from backgrounds of poverty if there is no practical way for them to realize their ambitions.

curriculum study and change, both in school and in college, to provide experiences that will keep the student involved in his studies in school and provide him with a college experience that relates to his interests and abilities at the post-secondary level.

research and development to be conducted continuously on all aspects of the working system in order to improve it as rapidly as possible and to ensure its continual responsiveness to changes on the educational scene.

I have dwelt at some length on this conception of a single program for disadvantaged students for two reasons. The first is that it illustrates

my main thesis: if we are going to tackle large educational and social problems with any hope of success, we will have to see the measurement job as just one element in a much larger whole that should be conceptualized and attacked in its entirety. In so doing, we will have to work with many people outside the educational research fraternity -- politicians, college administrators, guidance counselors, organized minority groups, and so on -- to weld a coalition of people who are willing to contribute their special knowledge to a common set of purposes. My second reason for outlining the concept is my personal belief that a development of this kind is feasible, necessary, and overdue.

III. Measurement Man's Future Role

In facing the issue of meeting education's measurement needs, I have chosen to look at two such needs in depth rather than to attempt a catalog of what ought to be done. Measurement needs are integral to education's needs. Increasingly, they will be met as we mount successful overall systems of educational reform in which the measurement component is embedded.

In this conception, measurement is not a self-sufficient act. It is part and parcel of efforts to effect educational change. And it is at the heart of many of these efforts. One might say, however, that the measurement person's job will become much harder as it becomes more central. This is so in two respects. First, as measurement assumes a central role in more sophisticated systems, the job of making the results of measurement readily understandable, and resistant to misunderstanding and misuse, will increase. This is an area where we have been less than resoundingly successful in the past and where redoubled effort will be essential. Second, a special obligation is placed on the measurement

person if we say that the measurement job is not over until the results have been analyzed, simplified, interpreted and put to use. I believe there is no such thing as good measurement that has not been used. This conception, if it is valid, puts a premium on the integration of measurement data with many other kinds of information, and requires us to think of ourselves in a team arrangement with representatives of other disciplines.

If we can achieve this situation for measurement, we can play a key role -- perhaps the key role -- in "getting it all together" in education. In meeting the measurement needs of education, we may be able to provide the ingredients that are critical in meeting some of the most important needs of education and of the larger society.